

## POSTERIOR CHAMBER LENS IMPLANT

### BACKGROUND OF THE INVENTION

#### I. Field of the Invention

The present invention relates to a posterior chamber lens implant for use after extracapsular surgery.

#### II. Description of the Prior Art

In extracapsular surgery, a surgical opening is formed through the front membrane or anterior capsule of the lens of the human eye and the cataracts and fluid within the interior of the lens is surgically removed. During such surgery, however, it is important to leave the posterior capsule of the lens intact so that it forms a barrier between the vitreous humor and the aqueous humor. Removal of the posterior capsule is known to result in a high incidence of retinal detachment as well as cystoid macular edema.

Following the removal of the cataracts, it is necessary to replace the human lens with an artificial lens implant in order to restore sight to the eye. Although these lens implants may be nested in the anterior chamber, i.e., behind the cornea, or in the pupil, it has been found that posterior chamber lens implants are medically superior to anterior chamber and pupil lens implants for a plurality of reasons.

The previously known posterior chamber lens implants comprise an optic having a convex front surface and generally planar rear surface. The lens implant is nested within the posterior chamber and so that the rear surface of the optic flatly abuts against the posterior capsule. The optic is typically secured in place in the posterior chamber by loops or haptics extending outwardly from the optic and sandwiched between the posterior capsule and anterior leads.

In a high incidence of cases, after a period of time following implantation of the lens the posterior capsule becomes clouded and obscures the vision of the eye. In order to restore the vision to the eye after this has occurred, it is necessary to perform a posterior capsulotomy to remove the portion of the posterior capsule that is aligned with the optic.

In one previously known method to perform a posterior capsulotomy known as discission, a needle is inserted into the eye and used to punch a hole through the posterior capsule and behind the optic. In many cases, however, the posterior capsule becomes tough following the extracapsular surgery so that it is necessary to enter the eye with scissors in order to cut a hole in the posterior capsule. Both discission and membrane cutting, however, involve a significant risk of introducing bacteria or other contaminants into the eye which may ultimately result in loss of the eye.

In the surgical procedure laser posterior capsulotomy, a laser is focused on the posterior capsule through the pupil. Upon activation of the laser, the laser burns an opening through the posterior capsule behind the optic thus restoring vision to the eye. The use of the laser in contrast with the previously known discission and membrane cutting is highly advantageous in that laser surgery is noninvasive and thus eliminates the possibility of introducing bacteria or other contaminants into the eye.

At present, however, laser posterior capsulotomy can be performed only on an anterior chamber or pupil lens implant. In a posterior chamber lens implant, the rear surface of the implant flatly abuts against the posterior capsule so that destruction of the posterior capsule by

the laser may also result in destruction of the lens implant.

### SUMMARY OF THE PRESENT INVENTION

The present invention provides a posterior chamber lens implant which enables a subsequent laser posterior capsulotomy to be performed, if necessary.

In brief, the lens implant of the present invention comprises an optic having a front surface, a rear surface and means for securing the optic within the posterior chamber. Preferably, the securing means comprises one or more haptics which are nested in between the posterior capsule and the anterior leads of the cataract capsule.

Unlike the previously known posterior chamber lens implant, however, the present invention comprises means for spacing the rear surface of the optic forwardly of the posterior capsule thus forming a space between the rear surface of the optic and the posterior capsule. In the preferred form of the invention, an annular ridge is formed around the outer periphery of the optic on its rear side so that the ridge extends rearwardly from the optic. Consequently, following implantation of the lens into the posterior chamber, the ridge abuts against the posterior capsule and spaces the rear surface of the optic forwardly from the posterior capsule.

In a second preferred embodiment of the invention, the rear surface of the lens implant is concavely formed so that, with the lens positioned within the posterior chamber, only the outer periphery of the rear side of the optic abuts against the posterior capsule. The remainder of the rear surface of the optic is spaced forwardly of the posterior capsule.

In practice, only a relatively small spacing, for example, one millimeter, is necessary between the rear surface of the lens implant and the posterior capsule in order to enable a laser posterior capsulotomy to be safely performed.

### BRIEF DESCRIPTION OF THE DRAWING

A better understanding of the present invention will be had upon reference to the following detailed description, when read in conjunction with the accompanying drawing, wherein like reference characters refer to like parts throughout the several views, and in which:

FIG. 1 is a fragmentary sectional view illustrating a first preferred embodiment of the lens implant of the present invention within the posterior chamber;

FIG. 2 is a fragmentary sectional view taken substantially along line 2—2 in FIG. 1;

FIG. 3 is a view taken substantially along line 3—3 in FIG. 1 and with parts removed for clarity;

FIG. 4 is a sectional view taken substantially along line 4—4 in FIG. 3;

FIG. 5 is a view similar to FIG. 4 but showing a modification thereof; and

FIG. 6 is a view similar to FIGS. 4 and 5, but showing a second preferred embodiment of the invention.

### DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT OF THE PRESENT INVENTION

With reference first to FIGS. 1 and 2, a human eye 10 is thereshown following extracapsular surgery. During extracapsular surgery, a circular opening 12 is formed in the anterior capsule 13 of the cataract capsule 14, or